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10/007,502

11/08/2001

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EXAMINER

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ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/007,502  
Filing Date: November 08, 2001  
Appellant(s): COPPETA, JONATHAN R.

**MAILED**  
**MAY 30 2007**  
**GROUP 1700**

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J. Grant Houston

For Appellant

**EXAMINER'S ANSWER**

This is in response to the Order of the Board of Patent Appeals and Interferences on  
dated 6/29/06.

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It is noted that the previous Examiner's Answer mailed on 1/09/06 is vacated and replace with corrected Examiner's Answer as follows:

This is in response to the appeal brief filed 11/20/06 appealing from the Office action mailed 4/12/05.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,500,869	YOSHIDA et al	3-1996
5,824,236	HAWKINS et al	10-1998
4,524,127	KANE	6-1985
4,451,119	MEYERS et al.	5-1984

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-9,11-15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kane (4,524,127) in view of Hawkins et al (5,824,236) and further in view of Yoshida et al (5,500,869).

Kane discloses a process of making an optical element such as an array of lens on silicon substrate, wherein topographic features such as blind holes or V-grooves are formed on the silicon substrate and the substrate is chemically polished to alter the topographic profile to produce a curved optical surface such as lens (col.1, lines 45-52 and figures 1-6).

Kane remain silent about the polishing of the substrate surface is mechanical polishing.

However, in a method of forming lens array, Hawkins et al teach that lens material can be preferably polished by chemical mechanical polishing and also teach

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that optically polished surface can be formed either by chemical etching/polishing or chemical mechanical polishing (col.8, lines 18-35).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to combine Hawkins et al's teaching into Kane's process by replacing chemical polishing with mechanical polishing such as chemical mechanical polishing because chemical polishing or etching and chemical mechanical polishing are functionally equivalent as taught by Hawkins et al.

Furthermore, mechanical polishing with the aid of chemical presence will increase the polishing rate than that of only chemical polishing and one of ordinary skilled in the art would have been motivated to do so.

Modified Kane remain silent about the dicing the substrate into optical elements.

However, in a method of making optical elements including lens array, Yoshida et al teach that after forming lens array on a silicon substrate, dicing the substrate in to individual optical devices (col.5, lines 32-35, col.7, lines 3-9 and col.8, lines 27-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of claimed invention to employ Yoshida et al's teaching of dicing the substrate into individual devices into modified Kane's process because such modified process will provide a plurality of devices at the same time by reducing the processing cost as taught by Yoshida et al.

As to claims 9 and 11-12, Kane teaches that after polishing the substrate, an optically coating such as anti-reflecting coating is formed on the polished surface (col.3, lines 49-51).

As to claims 17-18, Yoshida teaches that the dicing line (21) is two dimensional (see figure 1) and it would have been obvious to one of ordinary skilled in the art that the diced optical devices have orthogonal wall depending on the types of optical devices to be made.

Claims 10,16 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kane (4,524,127) in view of Hawkins et al (5,824,236) and Yoshida et al (5,500,869) and further in view of Meyers et al (4,451,119).

Modified Kane discussed in the paragraph above but fail to disclose the polished surface of the surface is coated with a highly reflective layer.

However, in a method of making mirrors, Meyers et al teach that a highly reflective layer is conventionally deposited on a polished surface in order to make mirrors (col.5, lines 45-65 and col.6, lines 1-6).

Therefore, it would have been obvious to one ordinary skilled in the art at the time of claimed invention to combine Meyers et al's teaching into modified Kane's teaching in order to make quality mirrors with high reflectivity as taught by Meyers et al.

As to claims 19-20, Yoshida teaches that the dicing line (21) is two dimensional (see figure 1) and it would have been obvious to one of ordinary skilled in the art that the diced optical devices have orthogonal wall depending on the types of optical devices to be made.

**(10) Response to Argument**

As to the 112, first paragraph rejection, applicant's showing is persuasive to overcome the rejection and accordingly the 112, first paragraph rejection to claims 17-20 is withdrawn.

Applicant's arguments filed 11/20/06 have been fully considered but they are not persuasive. Applicant argues that Hawking et al does not teach anything about producing curved surfaces by any kind of polishing and argues that Hawking et al teach that polishing can be planarize or produce flat surface.

In response, examiner states that the argument is not persuasive because the secondary reference (Hawking et al) is relied upon to show the functional equivalency of **chemical polishing** with **mechanical polishing** such as chemical mechanical polishing (see the rejection).

One of ordinary skilled in the art would recognize that chemical etching and mechanical polishing are equivalent in method for a wide range of applications, not only planarization. For example, applicant admits that it is known that mechanical polishing can shape substrates (see specification page 6, lines 3-10).

It is noted that the primary reference (Kane) already teaches that producing curved topographic features on the optical element (see the rejection).

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

SA  
May 23, 2007



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Primary Examiner  
Art Unit 1765

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